FIG. 1

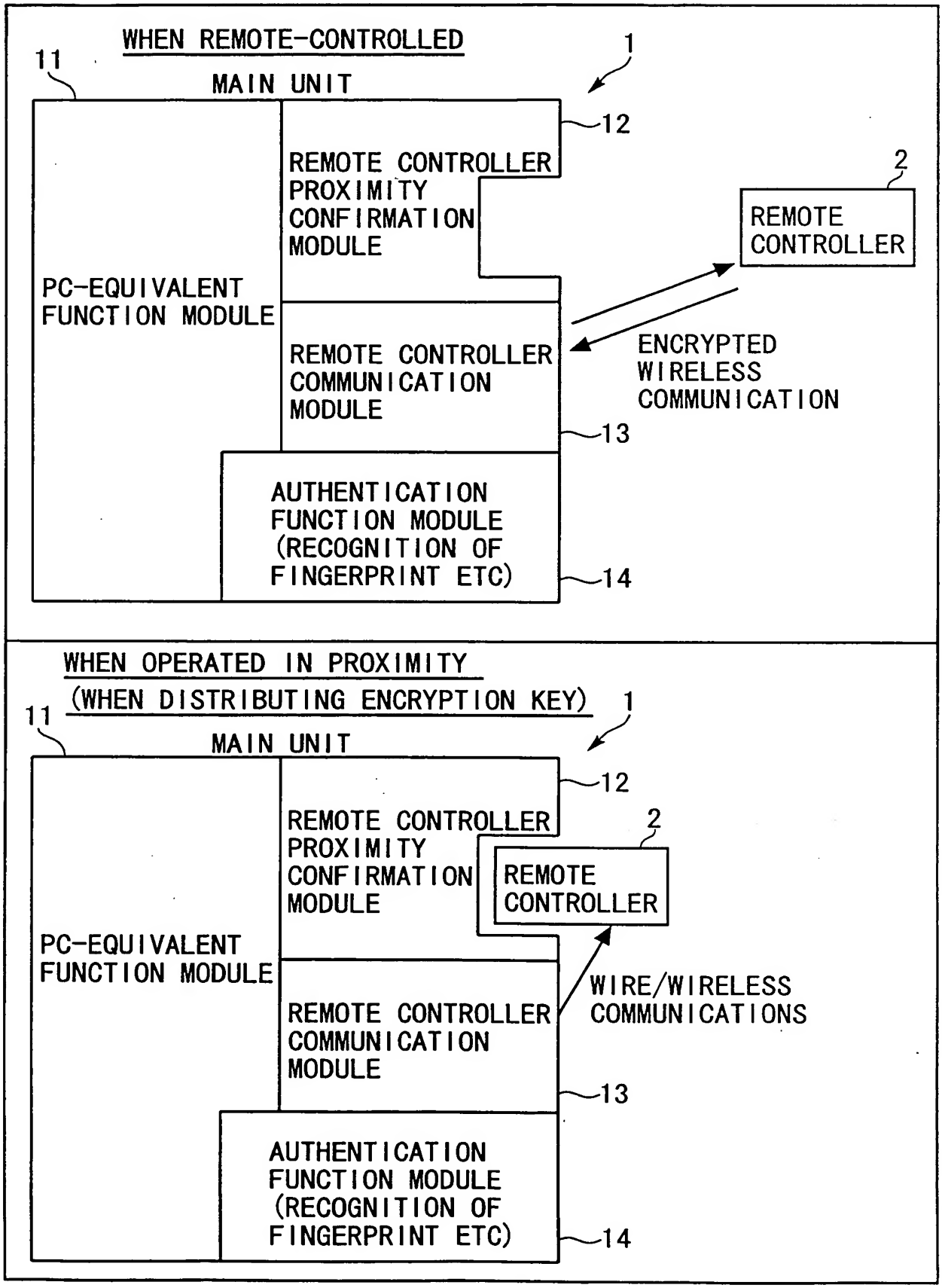
WHEN REMOTE-CONTROLLED
11
MAIN UNIT
1
12
REMOTE CONTROLLER PROXIMITY CONFIRMATION MODULE
2
REMOTE CONTROLLER
PC-EQUIVALENT FUNCTION MODULE
REMOTE CONTROLLER COMMUNICATION MODULE
ENCRYPTED WIRELESS COMMUNICATION
13
AUTHENTICATION FUNCTION MODULE (RECOGNITION OF FINGERPRINT ETC)
14
WHEN OPERATED IN PROXIMITY
(WHEN DISTRIBUTING ENCRYPTION KEY)
11
MAIN UNIT
1
12
REMOTE CONTROLLER PROXIMITY CONFIRMATION MODULE
2
REMOTE CONTROLLER
PC-EQUIVALENT FUNCTION MODULE
REMOTE CONTROLLER COMMUNICATION MODULE
WIRE/WIRELESS COMMUNICATIONS
13
AUTHENTICATION FUNCTION MODULE (RECOGNITION OF FINGERPRINT ETC)
14

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FIG. 2

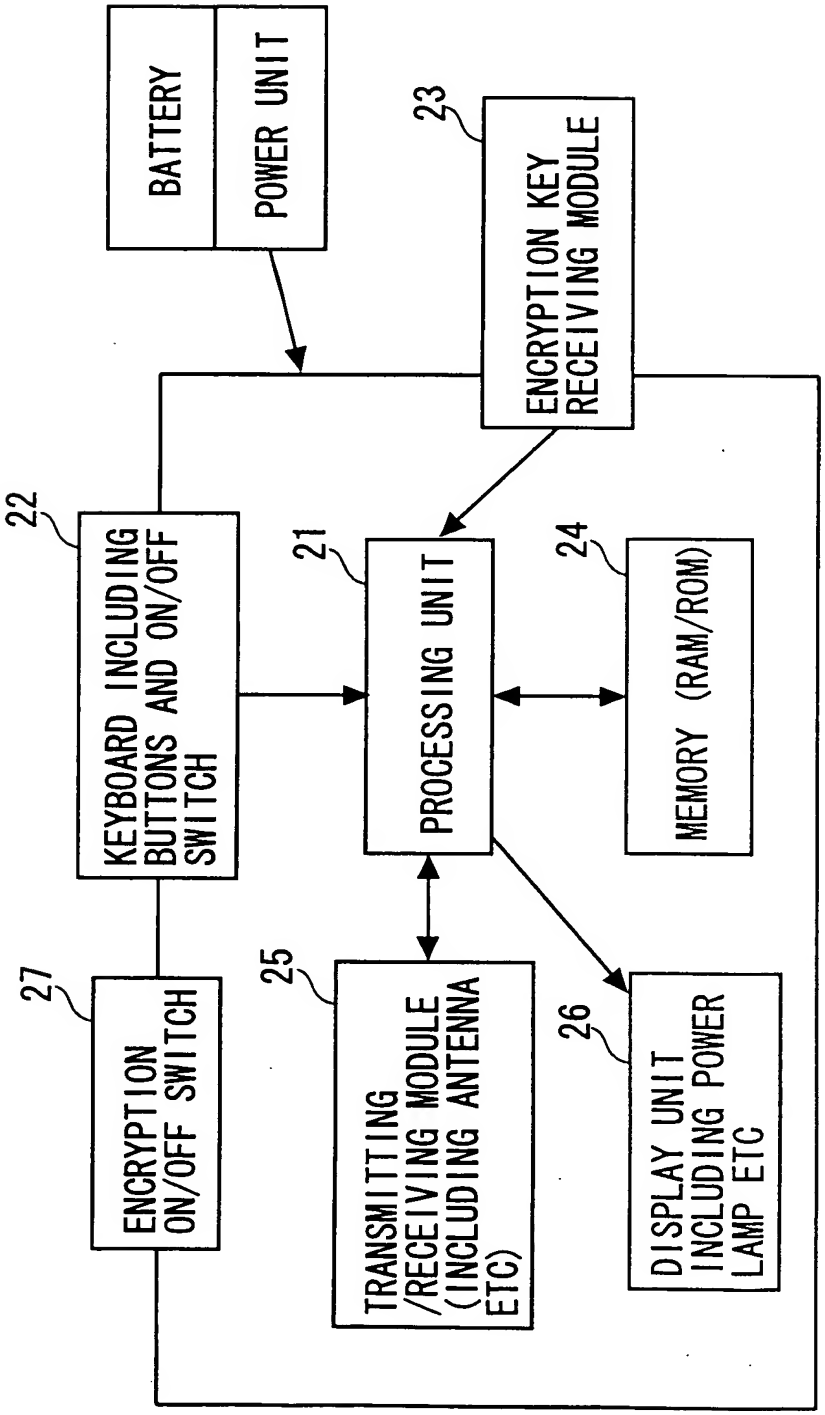


FIG. 3

EXAMPLE OF START-OF-COMMUNICATION PACKET

HEADER	PACKET ID	REMOTE CONTROLLER ID	DUMMY DATA	CHECKSUM	
55AA	0000	12345678	0000000000···	3F	

EXAMPLE OF COMMUNICATION PERMISSION PACKET

HEADER	PACKET ID	REMOTE CONTROLLER ID	SESSION ID	DUMMY DATA	CHECKSUM	
55AA	0001	12345678	41943786	00···	61	

EXAMPLE OF BUTTON INFORMATION/DUMMY PAKCET

HEADER	PACKET ID	REMOTE CONTROLLER ID	ENCRYPTED BUTTON INFORMATION OR DUMMY DATA	CHECKSUM	
55AA	0002	12345678	01987d4fa34f45a09185b197	8b	

EXAMPLE OF ACKNOWLEDGEMENT PACKET

HEADER	PACKET ID	REMOTE CONTROLLER ID	CHECKSUM OF RECEIVED PACKET	NEXT SESSION ID	CHECKSUM	
55AA	0003	12345678	8b	9858950	C4	

KEY INFORMATION ISSUING DEVICE . . .
Koike
Greer, Burns & Crain, Ltd. (Patrick Burns
Ref. No. 3169.66103
Sheet 3 of 10 (312) 360 0080

FIG. 4

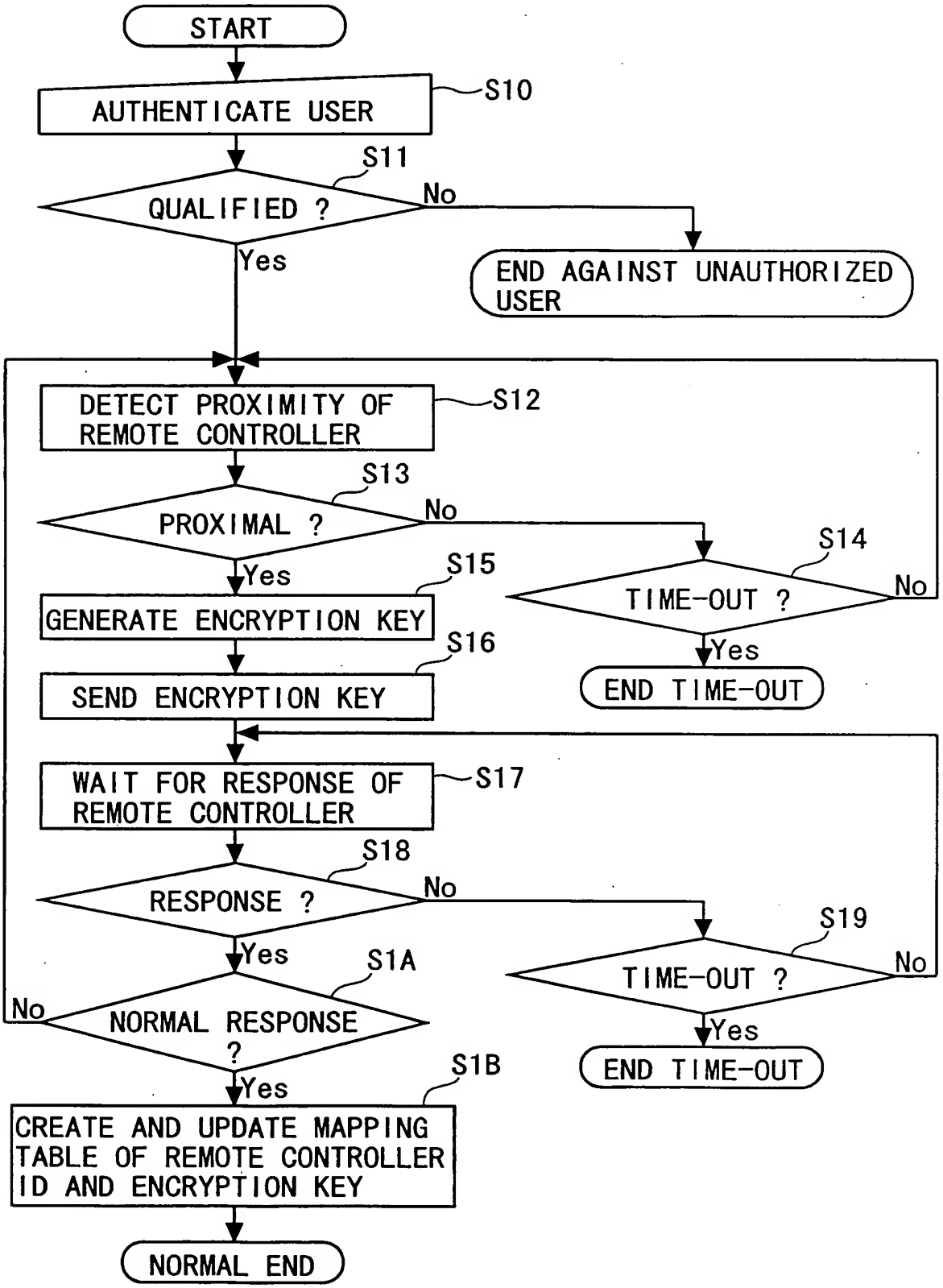

START
AUTHENTICATE USER
S10
S11
QUALIFIED ?
No
Yes
END AGAINST UNAUTHORIZED USER
DETECT PROXIMITY OF REMOTE CONTROLLER
S12
S13
PROXIMAL ?
No
Yes
S14
TIME-OUT ?
No
Yes
END TIME-OUT
S15
GENERATE ENCRYPTION KEY
S16
SEND ENCRYPTION KEY
WAIT FOR RESPONSE OF REMOTE CONTROLLER
S17
S18
RESPONSE ?
No
Yes
S19
TIME-OUT ?
No
Yes
END TIME-OUT
S1A
No
NORMAL RESPONSE ?
Yes
S1B
CREATE AND UPDATE MAPPING TABLE OF REMOTE CONTROLLER ID AND ENCRYPTION KEY
NORMAL END

FIG. 5

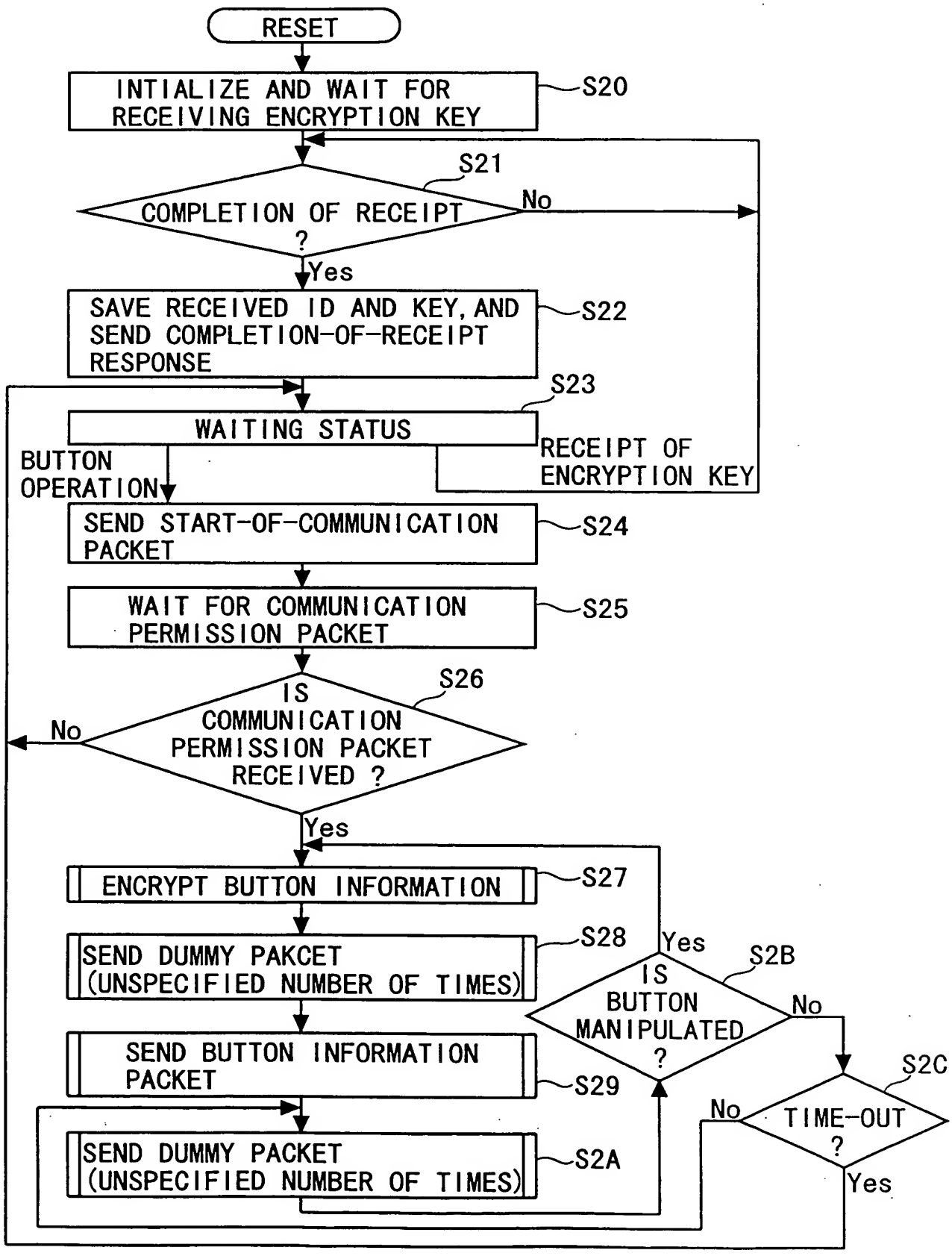

RESET
INTIALIZE AND WAIT FOR RECEIVING ENCRYPTION KEY
S20
S21
COMPLETION OF RECEIPT ?
No
Yes
SAVE RECEIVED ID AND KEY, AND SEND COMPLETION-OF-RECEIPT RESPONSE
S22
S23
WAITING STATUS
BUTTON OPERATION
RECEIPT OF ENCRYPTION KEY
SEND START-OF-COMMUNICATION PACKET
S24
WAIT FOR COMMUNICATION PERMISSION PACKET
S25
S26
IS COMMUNICATION PERMISSION PACKET RECEIVED ?
No
Yes
ENCRYPT BUTTON INFORMATION
S27
SEND DUMMY PAKCET (UNSPECIFIED NUMBER OF TIMES)
S28
SEND BUTTON INFORMATION PACKET
S29
SEND DUMMY PACKET (UNSPECIFIED NUMBER OF TIMES)
S2A
Yes
S2B
IS BUTTON MANIPULATED ?
No
S2C
TIME-OUT ?
No
Yes

FIG. 6

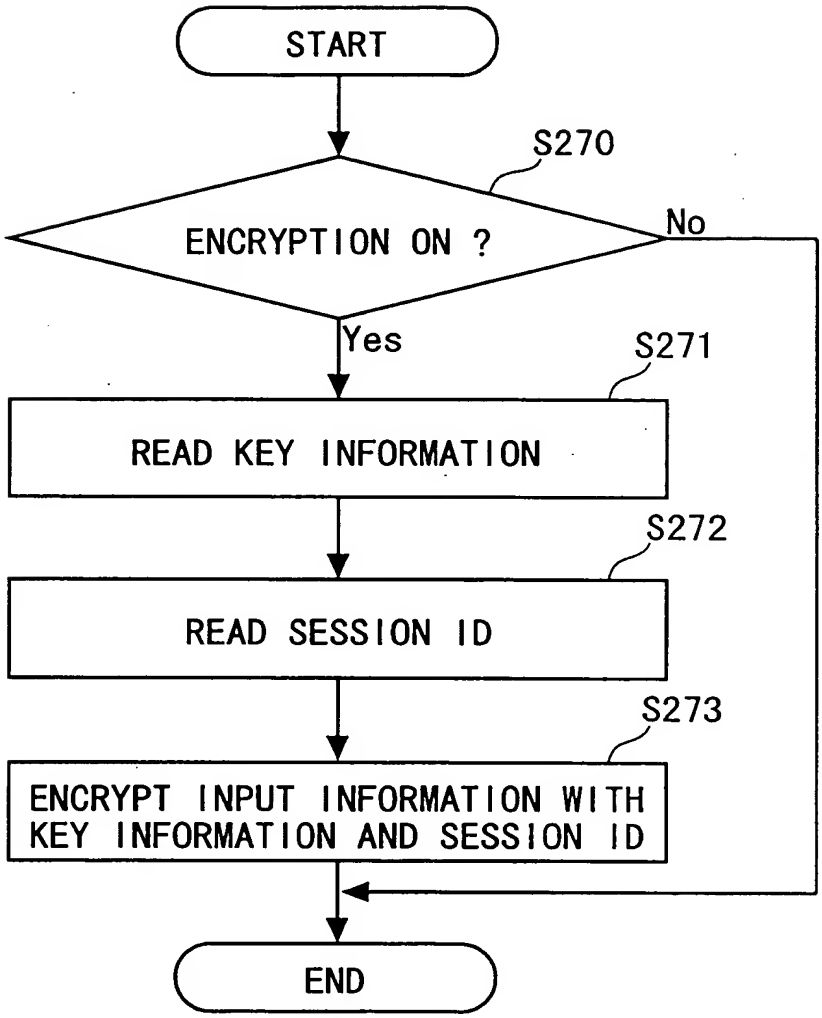

START
S270
ENCRYPTION ON ?
No
Yes
S271
READ KEY INFORMATION
S272
READ SESSION ID
S273
ENCRYPT INPUT INFORMATION WITH KEY INFORMATION AND SESSION ID
END

FIG. 7

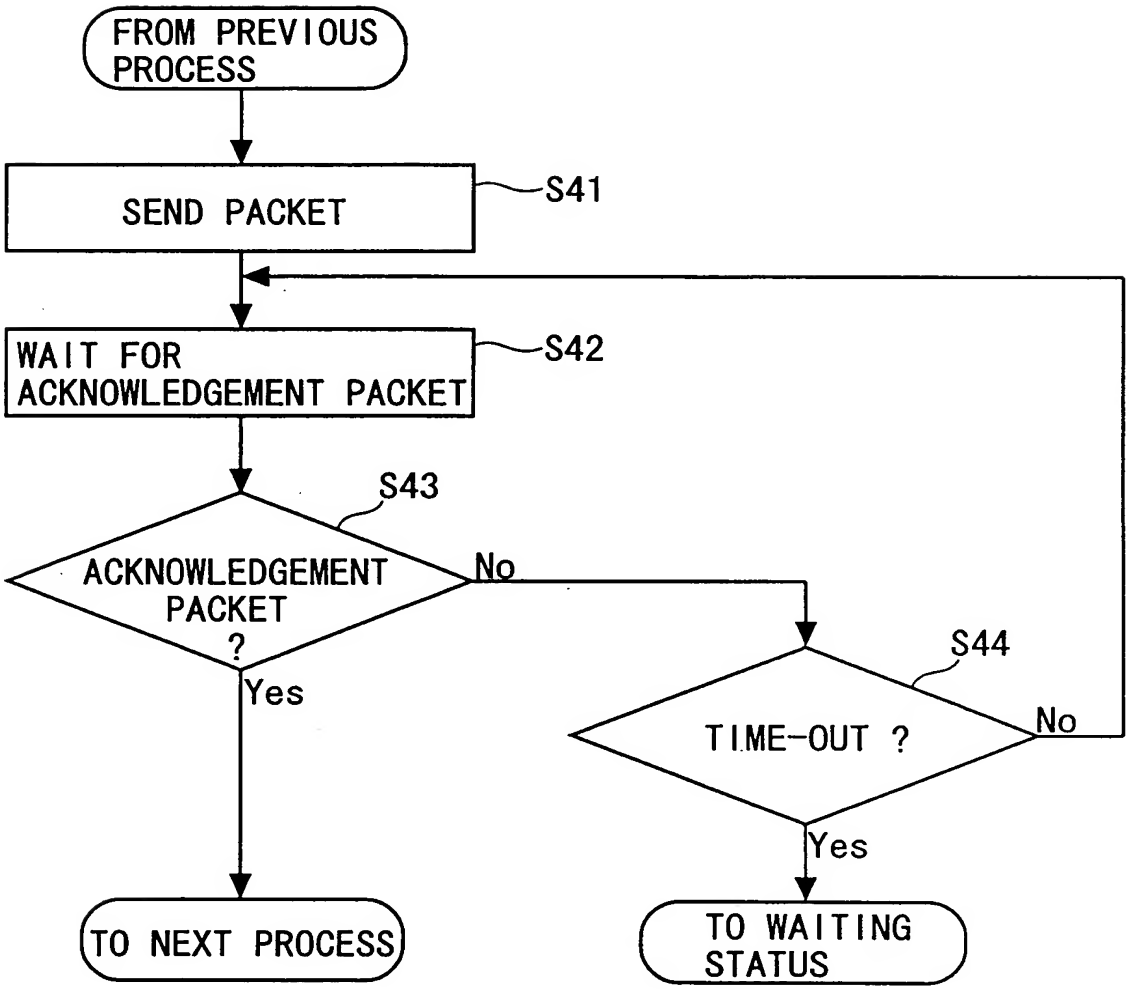

FROM PREVIOUS PROCESS
SEND PACKET
S41
WAIT FOR ACKNOWLEDGEMENT PACKET
S42
S43
ACKNOWLEDGEMENT PACKET ?
No
Yes
S44
TIME-OUT ?
No
Yes
TO NEXT PROCESS
TO WAITING STATUS

FIG. 8

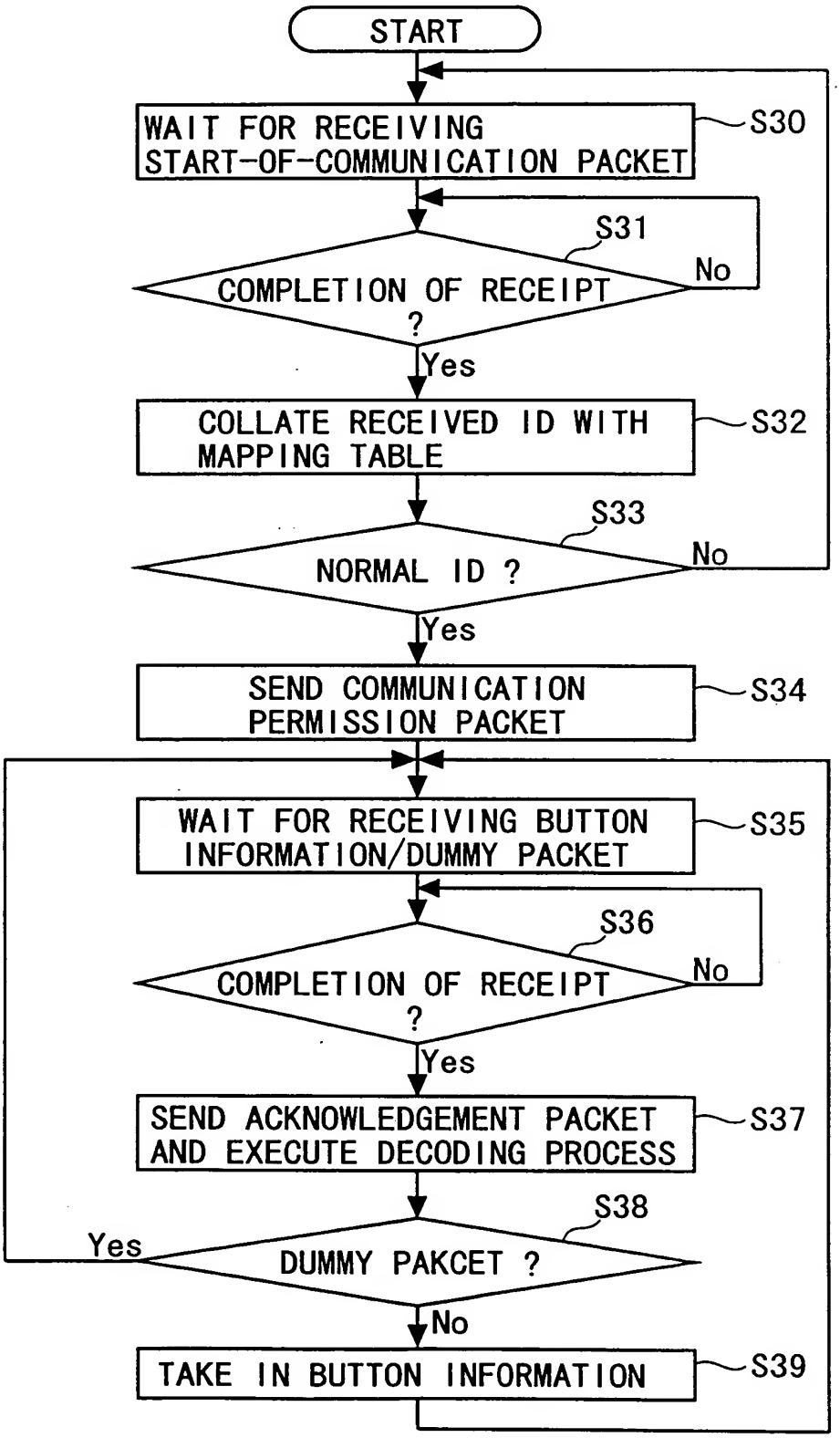

START
WAIT FOR RECEIVING START-OF-COMMUNICATION PACKET
S30
S31
COMPLETION OF RECEIPT ?
No
Yes
COLLATE RECEIVED ID WITH MAPPING TABLE
S32
S33
NORMAL ID ?
No
Yes
SEND COMMUNICATION PERMISSION PACKET
S34
WAIT FOR RECEIVING BUTTON INFORMATION/DUMMY PACKET
S35
S36
COMPLETION OF RECEIPT ?
No
Yes
SEND ACKNOWLEDGEMENT PACKET AND EXECUTE DECODING PROCESS
S37
S38
Yes
DUMMY PAKCET ?
No
TAKE IN BUTTON INFORMATION
S39

FIG. 9

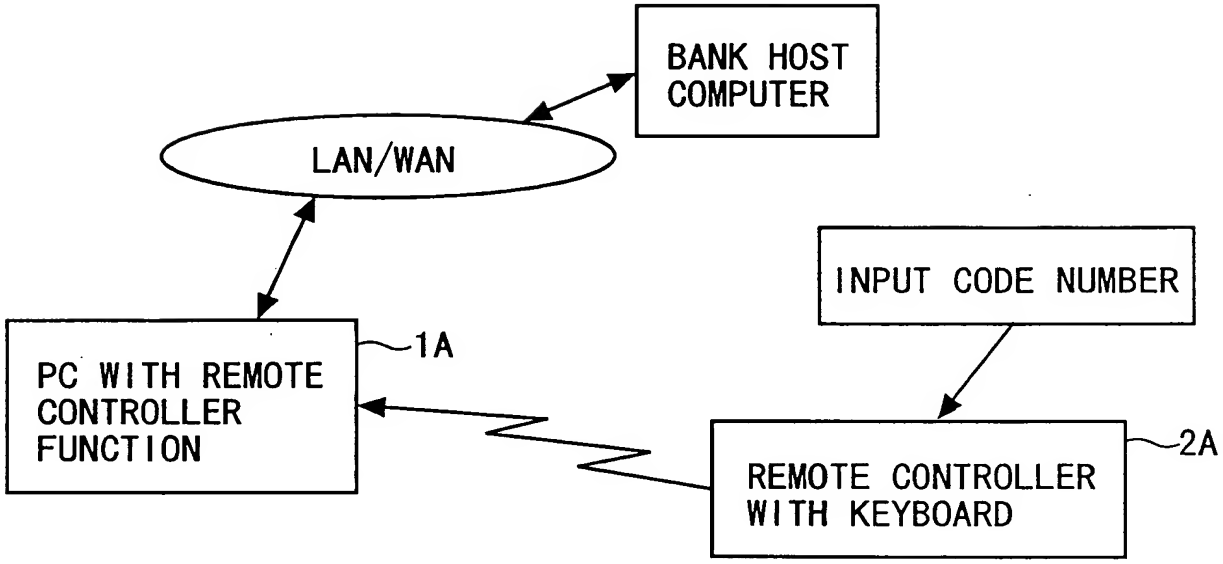
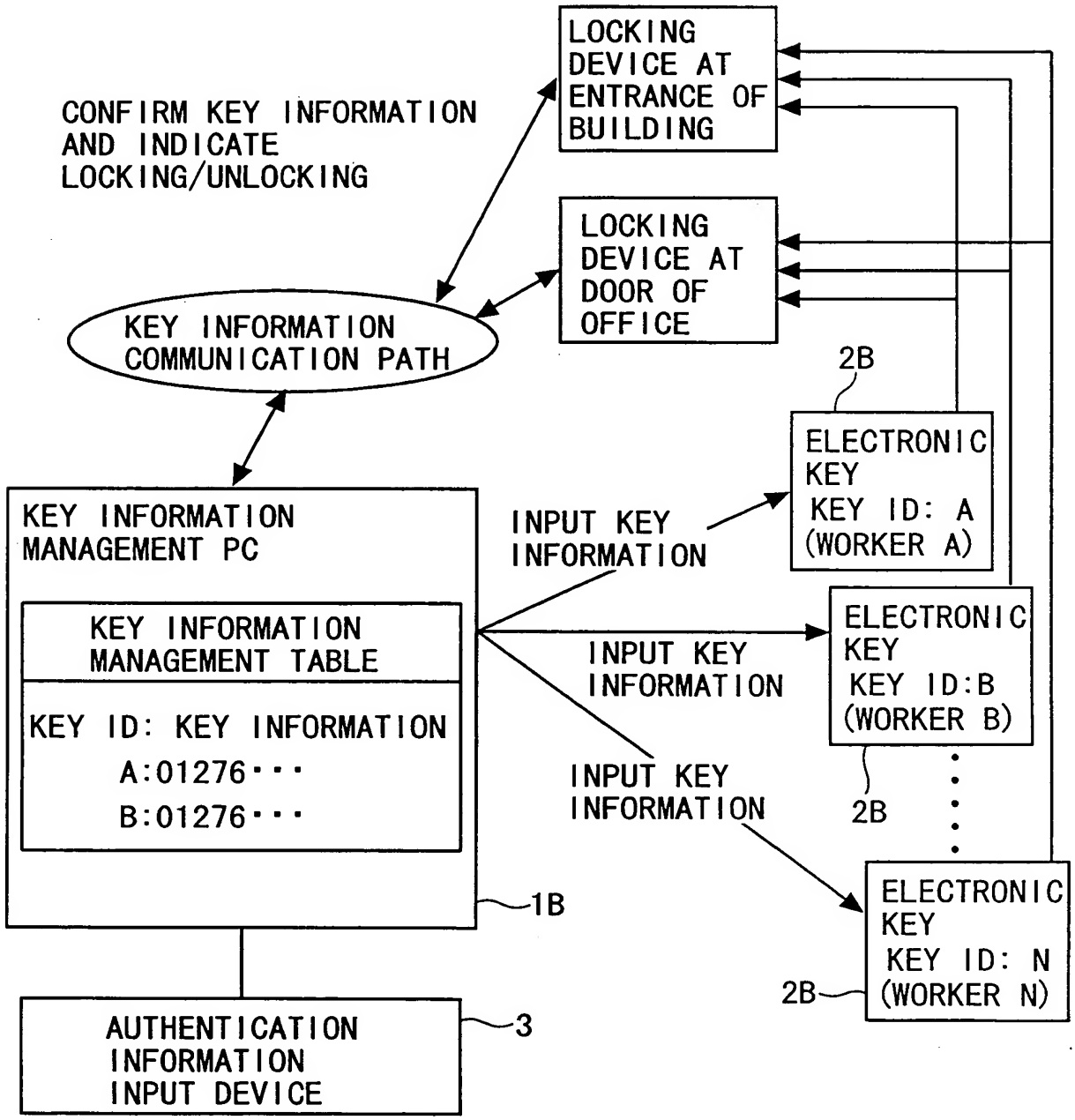

BANK HOST COMPUTER
LAN/WAN
INPUT CODE NUMBER
PC WITH REMOTE CONTROLLER FUNCTION
1A
REMOTE CONTROLLER WITH KEYBOARD
2A

FIG. 10


LOCKING DEVICE AT ENTRANCE OF BUILDING
CONFIRM KEY INFORMATION AND INDICATE LOCKING/UNLOCKING
LOCKING DEVICE AT DOOR OF OFFICE
KEY INFORMATION COMMUNICATION PATH
2B
ELECTRONIC KEY KEY ID: A (WORKER A)
KEY INFORMATION MANAGEMENT PC
INPUT KEY INFORMATION
KEY INFORMATION MANAGEMENT TABLE
KEY ID: KEY INFORMATION
A:01276・・・
B:01276・・・
INPUT KEY INFORMATION
ELECTRONIC KEY KEY ID:B (WORKER B)
INPUT KEY INFORMATION
2B
ELECTRONIC KEY KEY ID: N (WORKER N)
2B
1B
AUTHENTICATION INFORMATION INPUT DEVICE
3